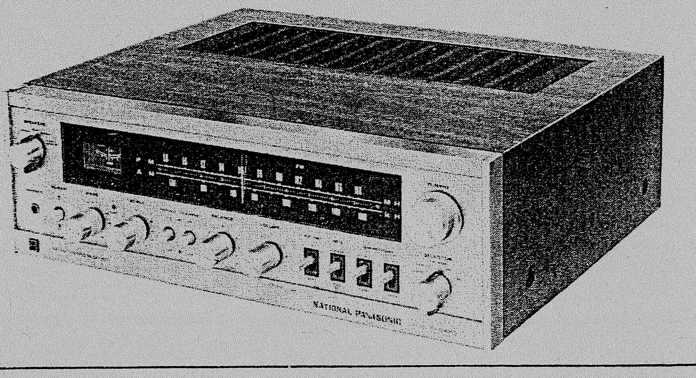
Service Manual

NATIONAL
HI-FI COMPONENTS
PANASONIC

FM/AM STEREO TUNER-AMPLIFIER



MODEL SA-5800

SPECIFICATIONS (Specifications are subject to change without notice.)

AUDIO SECTION

IHF Music Power:		100W (4Ω) 75W (8Ω)
RMS Power:		37/37W (4Ω) 27/27W (8Ω)
Harmonic Distortion:		0.5%
Intermodulation Distortion (60Hz+7kHz=4:1, SMPTE):		0.7%
Power Bandwidth:		5Hz~40kHz, −3dB
Frequency Response:	PHONO	RIAA ±1dB
	AUX	15Hz~65kHz, $^{+0}_{-3}$dB
Input Sensitivity & Impedance:	PHONO	2mV (50KΩ)
	AUX	180mV (50KΩ)
	Tape Monitor 1, 2	180mV
Residual Hum & Noise:		1.5mV
S/N (IHF, A):	PHONO	70dB
	AUX	90dB
Bass Range:		50Hz, +13dB −14dB
Treble Range:		10kHz, +10dB −10dB
High Filter:		5kHz, −6dB/oct
Damping Factor:		70 (8Ω)
Recording Output Level:		180mV
Loudness Control:		+11dB (50Hz), +4dB (10kHz)

FM TUNER SECTION

Frequency Range:	88~108MHz
Usable Sensitivity (IHF):	1.8μV
Harmonic Distortion (at 400Hz 100% Mod.):	0.4%
S/N:	60dB
Selectivity, Alternate Channel:	80dB
Spurious Response Rejection (at 98MHz):	75dB
IF Rejection (at 98MHz):	100dB
Image Rejection (at 98MHz):	90dB
AM Suppression:	45dB
Stereo Separation (at 1kHz):	35dB
Capture Ratio (IHF):	1.5dB
Frequency Response:	30Hz~13kHz, ±1dB

AM TUNER SECTION

Frequency Range:	525~1605kHz
Sensitivity (IHF):	15μV
Selectivity (at 1000kHz & ±10kHz):	30dB
Image Rejection (at 1000kHz):	65dB
IF Rejection (at 1000kHz):	70dB

GENERAL

Dimensions (including control knobs and fuse post, W × H × D):	16" × 5-1/2" × 14" (406×140×350)mm
Weight (Unpacked):	24lbs. (10.9kg)
Power Supply:	110/120/220/240V 230W

TECHNISCHE DATEN (Änderungen vorbehalten)

(Erfüllt die Mindestanforderungen nach DIN 45 500)

VERSTÄRKERTEIL

Musikleistung (bei Aussteurung beider Kanäle):		2×50W (4Ω) 2×32.5W (8Ω)
Nennleistung (Sinusleistung, bei Aussteurung beider Kanäle):		2×27W (4Ω) 2×23W (8Ω)
Klirrfaktor:		0.5% bei 1000Hz, Nennleistung (4Ω) 0.5% bei 40~16000Hz, Nennleistung (4Ω)
Intermodulation:		0.7% bei 250/8000Hz=4:1, Nennleistung (4Ω)
Leistungbandbreite:		5~40000Hz (−3dB)
Frequenzgang:		15~65000Hz (−3dB)
Dämpfungsfaktor:		70 (8Ω)
Fremdspannungsabstand:	bei Nennleistung PHONO	62dB
	AUX	77dB
Eingänge:	PHONO (MAG)	2mV/50KΩ
	AUX	180mV/100KΩ
Tonband Norm-Buchse (DIN):		
Wiedergabe		300mV/55KΩ
Aufnahme		60mV/70KΩ
Tonband Cinch-Buchse:		
Wiedergabe (PLAYBACK)		180mV/40KΩ
Aufnahme (REC OUT)		180mV/750Ω
Klangregler:		
Tiefen-Bereich		$^{+13}_{-14}$dB bei 50Hz
Höhen-Bereich		±10dB bei 10000Hz
Balanceregler (Regelumfang):		Von 0 bis ∞
Rauschfilter:		5000Hz bei −6dB/OKT

UKW-TUNERTEIL

Antennenanschluß:		300Ω (symmetrish) 75Ω (unsymmetrisch)
Empfangsbereich:		88~108MHz
Empfindlichkeit:	300Ω	1.8μV, 30dB Rauschabstand 1.6μV, 26dB Rauschabstand bei ±40kHz Hub
	75Ω	1.2μV, 30dB Rauschabstand 1.0μV, 26dB Rauschabstand bei ±40kHz Hub
Klirrfaktor:	Mono 0.2% Stereo 0.6%	bei ±40kHz Hub
Fremdspannungsabstand:	Mono 64dB Stereo 63dB	bei ±40kHz Hub
Selektivität bei 400kHz:		80dB
ZF-Festigkeit:		100dB
Spiegel-Selektion:		90dB
AM-Unterdrückung:		45dB
Gleichwellen-Selektion (Capture Ratio):		1.5dB
Pilotton-Unterdrückung:		38dB bei 19kHz 50dB bei 38kHz
Stereo-Übersprechdämpfung:		40dB bei 1000Hz
Begrenzung, Einsatzpunkt (−3dB):		1.2μV (−3dB)
Deemphasis:		50μ sec
Stereo Einsatzpunkt:		6μV
Bandbreite ZF-Verstärker:		400kHz
UKW-Demodulator:		400kHz

AM-TUNERTEIL

Empfangsbereich:	525~1605kHz
Zwischenfrequenz:	455kHz
Empfindlichkeit:	15μV
Selektivität:	30dB
Spiegel-Selektion:	65dB
ZF-Festigkeit:	70dB

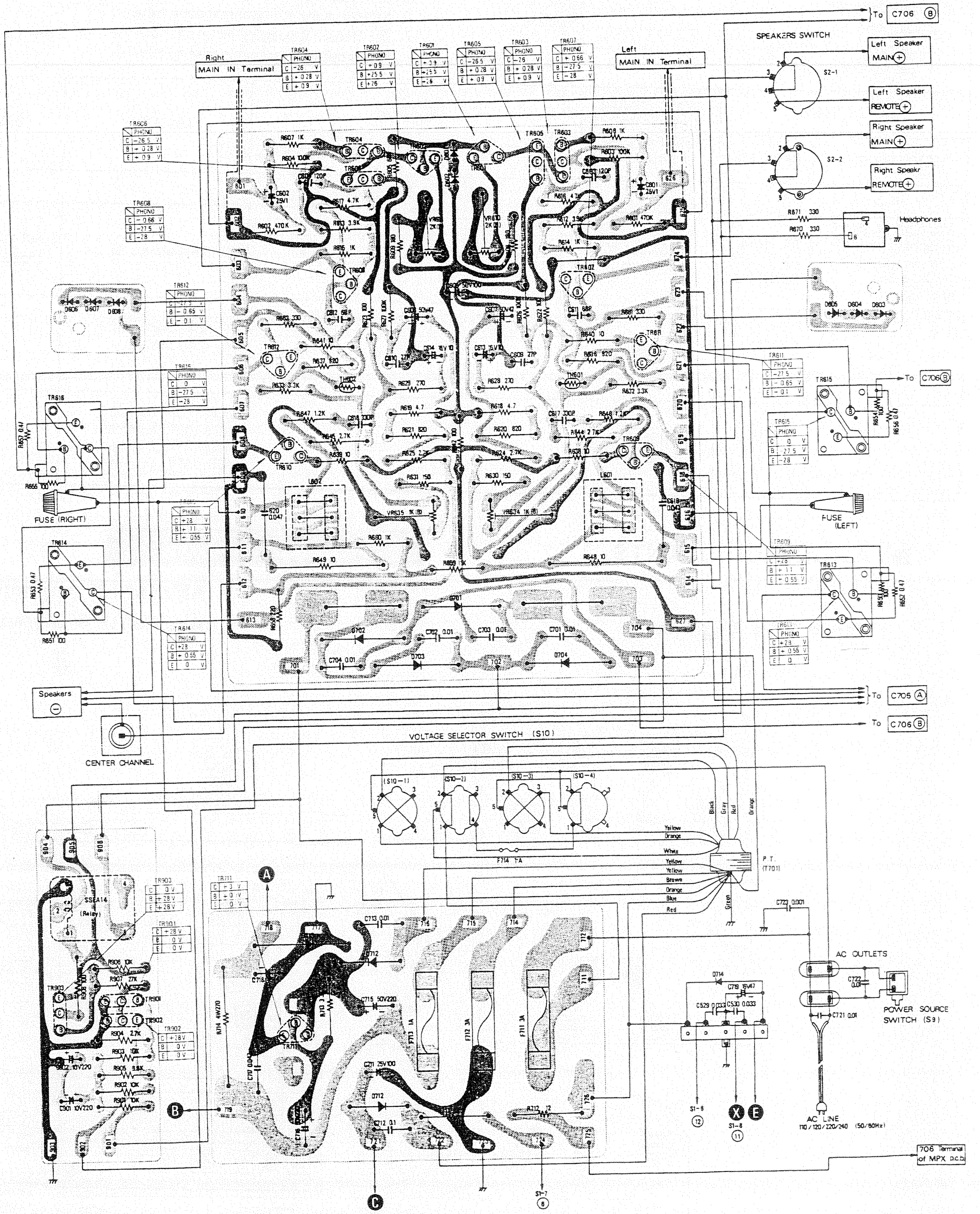
ALLGEMEINE DATEN

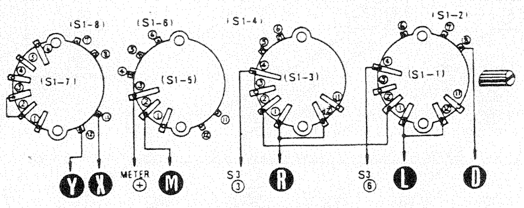
Leistungaufnahme:	230W
Netzspannung Umschaltbar:	110/120/220/240V
Abmessungen (über alles):	(B·H·T) 406·140·350mm
Gewicht:	10.9kg

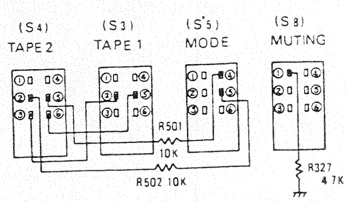
MATSUSHITA ELECTRIC
MATSUSHITA ELECTRIC TRADING CO., LTD.
P. O. Box 288, Central Osaka, Japan

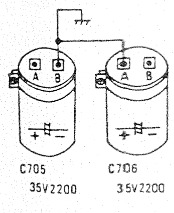
ORDER NO AD-010

Driver, Power Supply & Protection Circuit Board


To C706 Ⓑ
SPEAKERS SWITCH
Left Speaker MAIN⊕
Left Speaker REMOTE⊕
Right Speaker MAIN⊕
Right Speakr REMOTE⊕
S2-1
S2-2
R871 330
R870 330
Headphones
Right MAIN IN Terminal
Left MAIN IN Terminal
TR604
TR602
TR601
TR605
TR603
TR607
TR606
TR608
TR612
TR610
TR616
TR614
TR611
TR615
TR609
TR613
PHONO
D605 D604 D603
D606 D607 D608
FUSE (RIGHT)
FUSE (LEFT)
R657 0.47
R655 100
R653 0.47
R651 100
R654 0.47
R656 100
R652 0.47
R650 100
To C706 Ⓑ
To C705 Ⓐ
To C706 Ⓑ
Speakers ⊖
CENTER CHANNEL
VOLTAGE SELECTOR SWITCH (S10)
(S10-1)
(S10-2)
(S10-3)
(S10-4)
Black
Gray
Red
Orange
Yellow
Orange
White
Yellow
Yellow
Brown
Orange
Blue
Red
Green
P.T. (T701)
F714 7A
SSEA14 (Relay)
TR903
TR901
TR902
TR711
C722 0.001
AC OUTLETS
POWER SOURCE SWITCH (S9)
C721 0.01
AC LINE 110/120/220/240 (50/60Hz)
C529 0.033
C530 0.033
C719 16V47
D714
S1-8 ⑫
S1-8 ⑪
X
E
A
B
C
S1-7 ⑥
706 Terminal of MPX p.c.b.
C501 10V220
C502 10V220
C713 0.01
C715 50V220
C711 25V100
C712 0.1
F713 1A
F712 3A
F711 3A
R714 4W220
D712
D702
D701
D703
D704
C704 0.01
C702 0.01
C703 0.01
C701 0.01
L602
L601
VR635 1K (B)
VR634 1K (B)
R659 1K
R660 1K
R649 10
R648 10


(S1-8)
(S1-6)
(S1-4)
(S1-2)
(S1-7)
(S1-5)
(S1-3)
(S1-1)
Y
X
METER ⊕
M
S3 ③
R
S3 ⑥
L
D


(S4) TAPE 2
(S3) TAPE 1
(S5) MODE
(S8) MUTING
R501 10K
R502 10K
R327 4.7K


A
B
A
B
C705 35V2200
C706 35V2200

■ FM-RF ALIGNMENT INSTRUCTIONS .... Set for Germany

ABGLEICHANWEISUNGEN...........VOR DEM ABGLEICH SORGFÄLTIG DURCHLESEN

Anmerkungen :

1. Bereichsschalter .... FM-AUTO
2. Lautstärkenregler .... Maximum
3. Dämpfschalter (Muting) .... OFF
4. Betriebsartenschalter .... Stereo
5. Lautsprecherschalter .... Main oder Remote.
6. Netzspannung auf Nennspannung halten.
7. Der Meßsenderausgang darf nicht höher sein als notwendig, um eine bequeme Ausgangsanzeige zu erhalten.

MESSENDER		SKALENZEIGER-EINSTELLUNG DES EMPFÄNGERS [ABSTAND]	ANGEIGE (RÖHRENVOLTMETER ODER OSZILLOGRAPH)	ABGLEICH	BEMERKUNGEN
SCHALTUNG	FREQUENZ				
FM HF-ABGLEICH					
Anschluß an den FM Antennenanschluß über die künstliche FM Antenne. (Vgl. Abb. 5)	87.5 MHz (100% Mod. bei 400Hz)	87.5 MHz [0mm]	Output meter über Ausgangsklemme.	L6 (Oszillatorspule)	Auf max. Ausgang abgleichen.
〃	90 MHz (〃)	90 MHz	〃	L3 (Zwischenkreis) L4 (Zwischenkreis) L1 (Antennenspule)	〃
〃	106 MHz (〃)	106 MHz [150.3mm]	〃	CT4 (OSZ. Trimmer) CT2 (DET. Trimmer) CT3 (DET. Trimmer) CT1 (ANT. Trimmer)	〃

■ ALIGNMENT POINTS

■ ABGLEICHPUNKTE

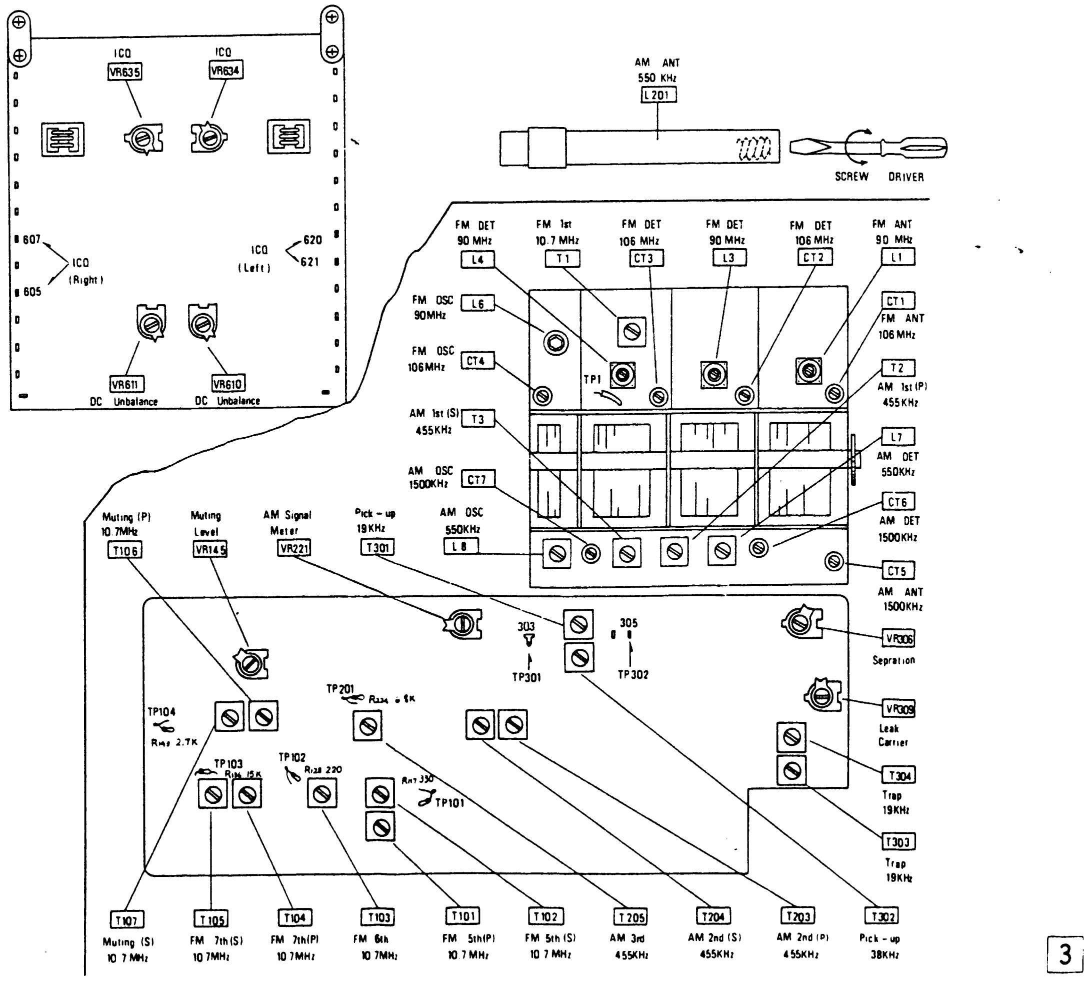
Main Amp Alignment

⇩

AM/FM-RF Alignment

AM/FM-IF & Stereo Alignment

⇩


ICO
VR635
ICO
VR634
607
605
ICO
(Right)
ICO
(Left)
620
621
VR611
DC Unbalance
VR610
DC Unbalance
AM ANT
550 KHz
L201
SCREW DRIVER
FM DET
90 MHz
L4
FM 1st
10.7 MHz
T1
FM DET
106 MHz
CT3
FM DET
90 MHz
L3
FM DET
106 MHz
CT2
FM ANT
90 MHz
L1
FM OSC
90MHz
L6
FM OSC
106MHz
CT4
TP1
CT1
FM ANT
106 MHz
T2
AM 1st (P)
455 KHz
AM 1st (S)
455KHz
T3
L7
AM DET
550KHz
AM OSC
1500KHz
CT7
CT6
AM DET
1500KHz
CT5
AM ANT
1500KHz
Muting (P)
10.7MHz
T106
Muting
Level
VR145
AM Signal
Meter
VR221
Pick - up
19KHz
T301
AM OSC
550KHz
L 8
303
TP301
305
TP302
VR306
Sepration
VR309
Leak
Carrier
TP104
R145 2.7K
TP201
R224 6.8K
TP103
R116 15K
TP102
R128 220
R117 330
TP101
T304
Trap
19KHz
T303
Trap
19KHz
T107
Muting (S)
10.7 MHz
T105
FM 7th (S)
10.7MHz
T104
FM 7th (P)
10.7MHz
T103
FM 6th
10.7MHz
T101
FM 5th (P)
10.7 MHz
T102
FM 5th (S)
10.7 MHz
T205
AM 3rd
455KHz
T204
AM 2nd (S)
455KHz
T203
AM 2nd (P)
455KHz
T302
Pick - up
38KHz

ALIGNMENT INSTRUCTIONS-READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Notes :

1. Volume control .... Minimum
2. Speakers switch............ Main
3. Other controls ....Optional position
4. Maintain line voltage at rated voltage.
5. Before the adjustment, Ic$_Q$ adjusting volumes (VR$_{634}$, and VR$_{635}$) should be turned to the left side completely.

	CIRCUIT	VTVM CONNECTION	ADJUSTMENT	REMARKS
	MAIN AMP ALIGNMENT			
1	DC UNBALANCE	Connect VTVM to speakers terminal.	VR$_{610}$ (Left) VR$_{611}$ (Right)	Make sure that VTVM become 0V.
2	Ic$_Q$	Connect to No. 620⊕, 621⊖ (left) and No. 605⊕, 607⊖ (right) terminals.	VR$_{634}$ (Left) VR$_{635}$ (Right)	Make adjustments so that the indication on VTVM becomes 12.5 mV.

Notes :

1. Volume control .... Maximum (AM-RF)
   Minimum (AM-IF, FM-IF)
   Variable (FM-RF)
2. Bass and treble control .... Center
3. Band selector switch .... AM, FM-Mono (FM-IF)
   FM-Auto (FM-RF)
4. Loudness switch .... OFF
5. Muting switch........................... OFF
6. High filter switch .... OFF
7. Tape-monitor switch ...... Source
8. Mode switch ....Stereo
9. Speakers switch............... Main or Remote
10. Maintain line voltage at rated voltage.
11. Output of signal generator should be no higher than necessary to obtain an output reading.

	SIGNAL GENERATOR or SWEEP GENERATOR		RCVR. DIAL SETTING [DISTANCE]	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTION	FREQUENCY				
	AM ALIGNMENT					
3	——	——	——	Signal meter of set.	VR$_{221}$	Adjust for "0" signal meter indication.
4	High side through 0.001 mfd to antenna terminal, Common to chassis.	455 kHz (20 kHz Sweep)	Point of non-interference (on/about 600 kHz)	Connect vert. amp. of scope to **TP$_{201}$**.	T$_2$ (1st IFT) (P) T$_3$ (1st IFT) (S) T$_{203}$(2nd IFT) (P) T$_{204}$(2nd IFT) (S) T$_{205}$(3rd IFT)	Adjust for maximum output.
5	Fashion loop of several turns of wire and radiate signal into loop of receiver.	550 kHz (30% Mod. with 400 Hz)	550 kHz [20.5mm (13/16")]	Connect meter to main speakers terminal of set.	L$_8$ (OSC Coil) L$_{201}$(ANT Coil) L$_7$ (DET Coil)	Adjust for maximum output. Adjust L$_{201}$ by ferrite core.
6	〃	1500 kHz (〃)	1500 kHz [160.2mm (6 5/16")]	〃	CT$_7$ (OSC Trimmer) CT$_5$ (ANT Trimmer) CT$_6$ (DET Trimmer)	Adjust for maximum output. Repeat steps (5) and (6)
	FM-IF, TUNING METER AND MUTING CIRCUIT ALIGNMENT					
7	High side through 0.001 mfd. to **TP$_1$**.	10.7 MHz (400 kHz Sweep)	Point of non-interference. (on/about 90 MHz)	Connect vert. amp. of scope through detector to FM-IF p.c.b. **TP$_{101}$**, Common to chassis. (Refer to fig. 1)	T$_1$ (FM 1st IFT)	Adjust for maximum amplitude and proper linearity between ±100 kHz markers. (Refer to fig. 2)
8	〃	〃	〃	Connect scope through detector to **TP$_{102}$**.	T$_{101}$ (FM 5th IFT) (P) T$_{102}$ (FM 5th IFT) (S) T$_{103}$ (FM 6th IFT)	〃
9	〃	〃	〃	Tuning meter of set.	T$_{105}$ (FM 7th IFT) (S)	Adjust for center of tuning meter indication. (Refer to fig. 3)
10	〃	〃	〃	Connect vert. amp. of scope to **TP$_{103}$**.	T$_{104}$(FM 7th IFT) (P)	Adjust T$_{104}$ so that 10.7 MHz marker appears at the center. (Refer to fig. 4)
11	〃	〃	〃	Connect vert. amp. of scope to **TP$_{104}$**.	T$_{106}$(Muting IFT) (P) T$_{107}$(Muting IFT) (S)	Adjust for maximum sharp and proper linearity. (Refer to fig. 2)

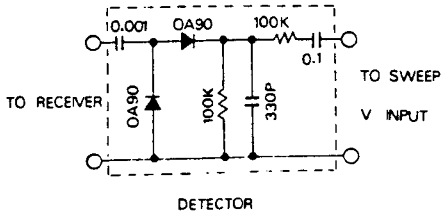


Fig. 1

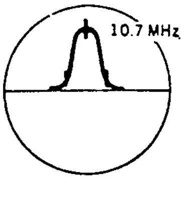


Fig. 2

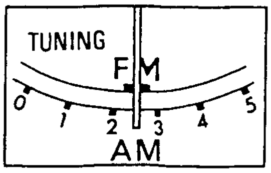


Fig. 3

	SIGNAL GENERATOR		RCVR. DIAL SETTING 〔DISTANCE〕	INDICATOR VTVM or SCOPE	ADJUSTMENT	REMARKS
	CONNECTION	FREQUENCY				
	FM-RF ALIGNMENT					
12	Connect to FM antenna terminal through FM dummy antenna. (Refer to fig. 5)	90 MHz (30% Mod. with 400 Hz)	90 MHz 〔21.3mm (27/32")〕	Output meter across speaker terminals.	L_6 (FM OSC Coil) L_3 (FM DET Coil) L_4 (FM DET Coil) L_1 (FM ANT Coil)	Adjust for maximum output.
13	〃	106 MHz (〃)	106 MHz 〔150.3mm (5 29/32")〕	〃	CT_4 (FM OSC Trimmer) CT_2 (FM DET Trimmer) CT_3 (FM DET Trimmer) CT_1 (FM ANT Trimmer)	Adjust for maximum output. Repeat steps (12) and (13).
	MUTING LEVEL ALIGNMENT					
	Note : Muting switch ....ON					
14	Connect to FM antenna terminal through FM dummy antenna.	98 MHz (100% Mod. with 400 Hz) Output 28 dB	98 MHz	Output meter or speaker across speaker terminals.	VR_{145}	Adjust so that output can be obtained.
	FM-MONO DISTORTION ALIGNMENT					
	Note : Muting switch .... OFF					
15	Connect to FM antenna terminal through FM dummy antenna.	98 MHz (100% Mod. with 400 Hz) Output 60 dB	98 MHz	Connect distortion meter to speaker terminals.	T_{104} (FM 7th IFT) (P)	Adjust for minimum distortion.

Notes :

Stereo-modulator .... Connect stereo-modulator output to EXT. MOD. terminal of signal generator. Internal OSC 1 kHz. Pilot signal modulation 10%.

Signal generator...................... Frequency approximately 98 MHz. Output level 60 dB. Moduration mode FM.

1. Band selector .... FM-Auto
2. Bass and treble control .... Center
3. High filter switch...........................OFF
4. Mode switch .... Stereo
5. Maintain line voltage at rated voltage
6. Muting switch .... OFF
7. Loudness switch .... OFF
8. Speaker switch .... Main
9. Tape monitor switch ....Source
10. Dummy load ....8Ω, L and R Main terminal

19 kHz, 38 kHz COIL AND PHASE ALIGNMENT

	SIGNAL GENERATOR CONNECTION	STEREO MODULATOR MODE and MOD. RATE	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS
16	FM antenna terminal thru. dummy antenna.	————	Connect scope to **TP**$_{302}$, Common to chassis.	T_{301} (19 kHz Coil)	Adjust for maximum output.
17	〃	————	Connect scope to **TP**$_{301}$, Common to chassis.	T_{302} (38 kHz Coil)	〃
18	〃	L (or R) 100%	Connect scope to speaker terminals.	T_{301} (19 kHz Coil)	Adjust for minimum right (or left) output.
	SEPARATION ALIGNMENT				
19	FM antenna terminal thru. dummy antenna.	L (and R) 30%	Output meter across speaker terminals through low pass filter. (Refer to fig. 6)	VR_{306}	Adjust for minimum right (and left) output.
	LEAK CARRIER AND 19 kHz TRAP ALIGNMENT				
20	FM antenna terminal thru. dummy antenna.	100% Mod. with 1 kHz.	Connect VTVM to speaker terminals.	Volume control of set.	Adjust for 0 dB (3 V range) output.
21	〃	0% Modulation	〃	VR_{309}	Adjust for minimum leak carrier.
22	〃	〃	〃	T_{303} (19 kHz Trap) T_{304} (19 kHz Trap) Right	Adjust for minimum output. (left and right side)

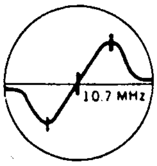


Fig. 4

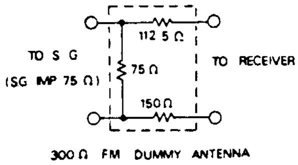
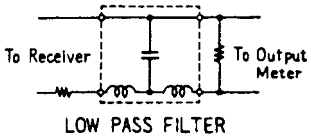


Fig. 5



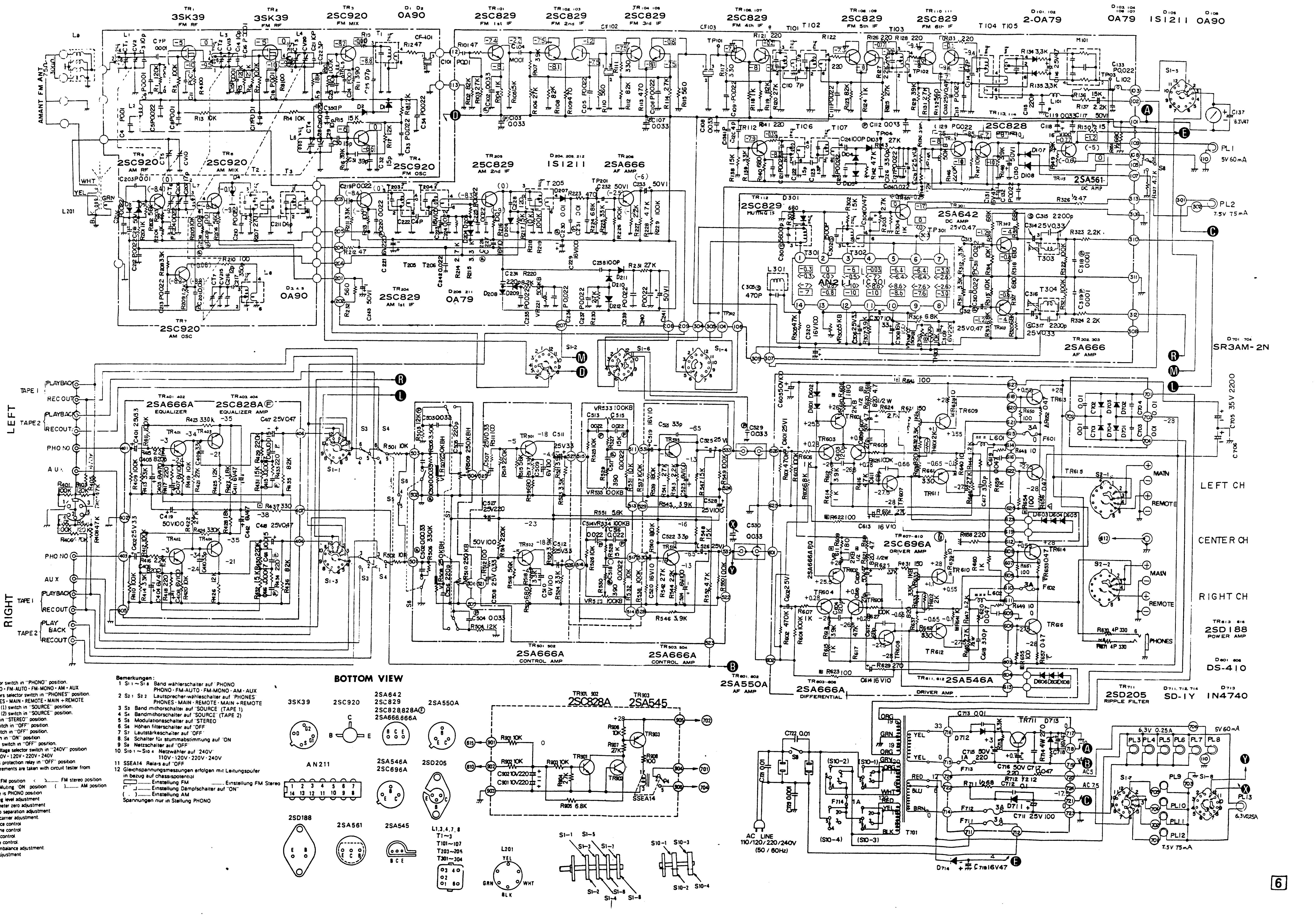
LOW PASS FILTER
(fc = 15kHz ~ 19kHz)

Fig. 6

Abb. 5

Schematic Diagram — Model SA-5800

(This schematic diagram may be modified with development of technology)


TR1 3SK39 FM RF
TR2 3SK39 FM RF
TR3 2SC920 FM MIX
D1 D2 OA90
TR101 2SC829 FM 1st IF
TR102 103 2SC829 FM 2nd IF
TR104 105 2SC829 FM 3rd IF
TR106 107 2SC829 FM 4th IF
TR108 109 2SC829 FM 5th IF
TR110 111 2SC829 FM 6th IF
D101 102 2-OA79
D103 104 105 107 OA79
D106 1S1211
D108 OA90
CF-401
CF102
CF103
T101 T102 T103 T104 T105 T106 T107
M101
AMANT FM ANT 75Ω 300Ω
L201
WHT
YEL
GRN
BLK
TR5 2SC920 AM RF
TR6 2SC920 AM MIX
TR4 2SC920 FM OSC
TR7 2SC920 AM OSC
D3 4 5 OA90
TR205 2SC829 AM 2nd IF
D204 205 212 1S1211
TR206 2SA666 AF AMP
TR204 2SC829 AM 1st IF
D208 211 OA79
TR112 2SC829 MUTING IF
D301
TR113 2SA561 DC AMP
TR301 2SA642 DC AMP
TR302 303 2SA666 AF AMP
L301
T301 T302 T303 T304
PL1 5V 60mA
PL2 7.5V 75mA
S1-2 S1-4 S1-5 S1-6
S8
D701 704 SR3AM-2N
C705 35V 2200
TAPE 1 PLAYBACK REC OUT
TAPE 2 PLAYBACK RECOUT
PHONO
AUX
LEFT
RIGHT
TR401 402 2SA666A EQUALIZER
TR403 404 2SC828A(F) EQUALIZER AMP
S1-1 S1-3 S3 S4 S6 S7
VR533 100KB
VR535 100KB
VR534 100KB
TR501 502 2SA666A CONTROL AMP
TR503 504 2SA666A CONTROL AMP
TR601 602 2SA550A AF AMP
TR603 606 2SA666A DIFFERENTIAL
TR607 610 2SC696A DRIVER AMP
TR611 612 2SA546A DRIVER AMP
TR613 616 2SD188 POWER AMP
D601 606 DS-410
TR609
TR615
TR614
F601 3A
F602 3A
L601
L602
D603 D604 D605
D606 D607 D608
S2-1 MAIN REMOTE
S2-2 MAIN REMOTE
LEFT CH
CENTER CH
RIGHT CH
PHONES
R670 4P 330
R671 4P 330
TR711 2SD205 RIPPLE FILTER
D711, 712, 714 SD-1Y
D713 1N4740
C713 0.01
D712
D714
C716 50V C717 220
C715 50V 220
C711 25V 100
C714 16V47
F711 3A
F712 3A
F713
F714 1A
T701
S9
C722 0.01
(S10-1) (S10-2) (S10-3) (S10-4)
AC LINE 110/120/220/240V (50/60Hz)
ORG GRN YEL RED BLU BRN BLK WHT GRY
AC5
AC 7.5
6.3V 0.25A
5V 60mA
PL3 PL4 PL5 PL6 PL7 PL8
PL9 PL10 PL11 PL12 PL13
S1-7 S1-8
6.3V 0.25A
7.5V 75mA
TR901 902 2SC828A
TR903 2SA545
SSEA14
R901 10K R902 10K R903 10K R904 R905 6.8K
C901 10V220 C902 10V220
BOTTOM VIEW
3SK39
G2 D G1 S
2SC920
C B E
2SA642 2SC829 2SC828 828A(F) 2SA666 666A
B C E
2SA550A
AN211
1 2 3 4 5 6 7
14 13 12 11 10 9 8
2SA546A 2SC696A
2SD205
2SD188
E B
2SA561
2SA545
B C E
L1,3,4,7,8 T1~3 T101~107 T203~205 T301~304
03 4 0 02 01 80
L201
YEL GRN WHT BLK
S1-1 S1-5 S1-3 S1-7 S1-2 S1-6 S1-4 S1-8
S10-1 S10-3 S10-2 S10-4
A B C D E M R L X Y

Notes :

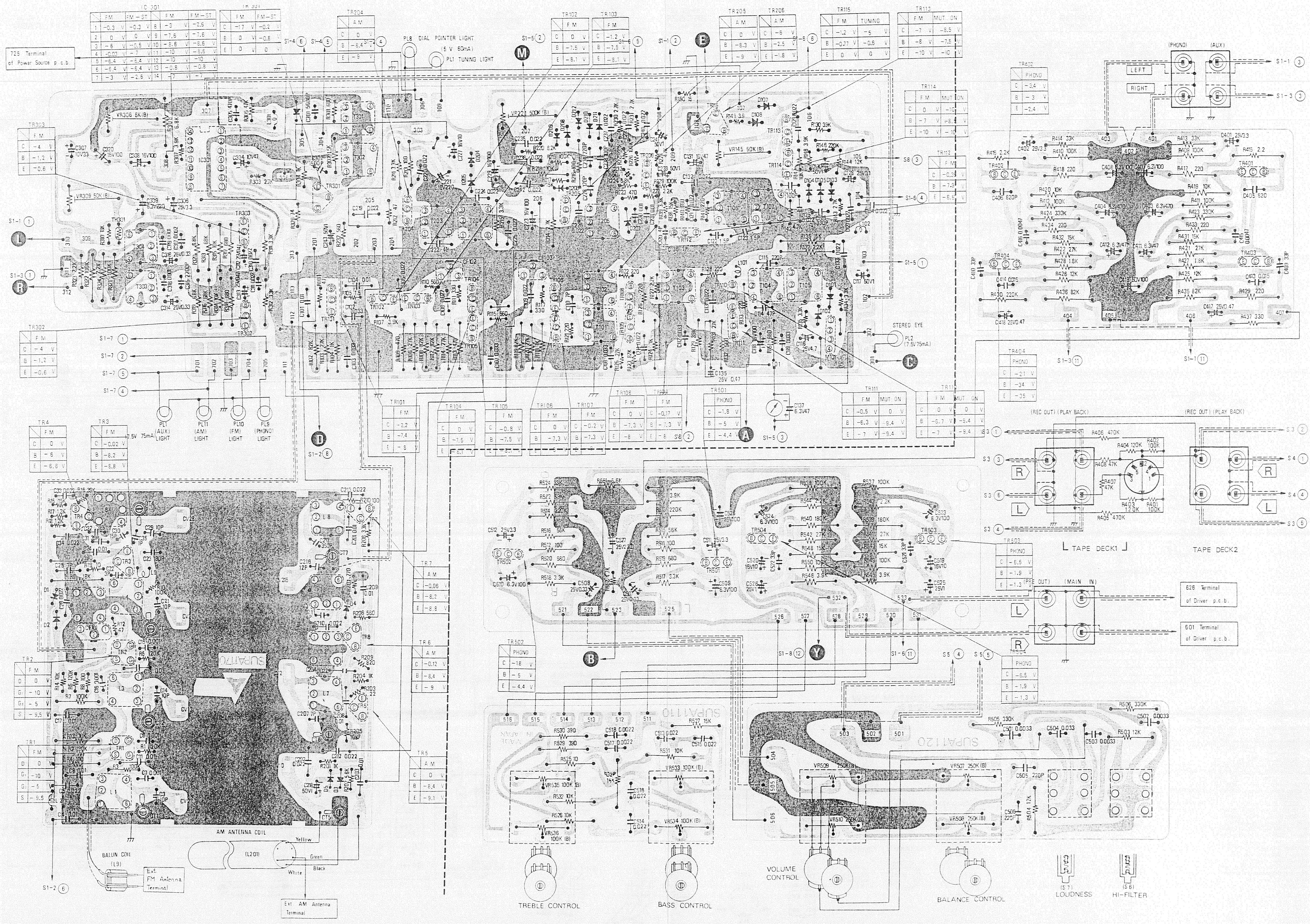
1. $S_{1\cdot1} \sim S_{1\cdot8}$ Selector switch in "PHONO" position.
   PHONO · FM-AUTO · FM-MONO · AM · AUX
2. $S_{2\cdot1}$, $S_{2\cdot2}$ Speakers selector switch in "PHONES" position.
   PHONES · MAIN · REMOTE · MAIN + REMOTE
3. S_3 Tape monitor (1) switch in "SOURCE" position.
4. S_4 Tape monitor (2) switch in "SOURCE" position.
5. S_5 Mode switch in "STEREO" position.
6. S_6 High filter switch in "OFF" position.
7. S_7 Loudness switch in "OFF" position.
8. S_8 Muting switch in "ON" position.
9. S_9 Power source switch in "OFF" position.
10. $S_{10\cdot1} \sim S_{10\cdot4}$ Voltage selector switch in "240V" position
    110V · 120V · 220V · 240V
11. SSEA14 Speakers protection relay in "OFF" position.
12. DC Voltage measurements are taken with circuit tester from chassis ground.
    ▭ .... FM position ‹ › .... FM stereo position
    ⌐ ┘ .... Muting "ON" position ( ) .... AM position
    Other voltage is PHONO position
13. VR_{145} Muting level adjustment
14. VR_{221} AM meter zero adjustment
15. VR_{306} Stereo separation adjustment
16. VR_{309} Leak carrier adjustment.
17. $VR_{507, 508}$ Balance control
18. $VR_{509, 510}$ Volume control
19. $VR_{533, 534}$ Bass control.
20. $VR_{535, 536}$ Trable control.
21. $VR_{610, 611}$ DC unbalance adjustment.
22. $VR_{634, 635}$ ICO adjustment

Bemerkungen :

1. $S_{1\cdot1} \sim S_{1\cdot8}$ Band wählerschalter auf "PHONO
   PHONO · FM-AUTO · FM-MONO · AM · AUX
2. $S_{2\cdot1}$ $S_{2\cdot2}$ Lautsprecher-wähleschalter auf "PHONES"
   PHONES · MAIN · REMOTE · MAIN + REMOTE
3. S_3 Band mithorschalter auf "SOURCE" (TAPE 1).
4. S_4 Bandmithorschalter auf "SOURCE" (TAPE 2)
5. S_5 Modulationsschalter auf "STEREO"
6. S_6 Höhen filterschalter auf "OFF"
7. S_7 Lautstärkeschalter auf "OFF"
8. S_8 Schalter für stummabstimmung auf "ON
9. S_9 Netzschalter auf "OFF"
10. $S_{10\cdot1} \sim S_{10\cdot4}$ Netzwähler auf "240V"
    110V · 120V · 220V · 240V
11. SSEA14 Relais auf "OFF
12. Gleichspannungsmessungen erfolgen mit Leitungspüfer in bezug auf chassispotential
    ▭ .... Einstellung FM .... Einstellung FM Stereo
    ⌐ ┘ .... Einstellung Dämpfschalter auf "ON"
    (.) .... Einstellung AM
    Spannungen nur in Stellung PHONO

AM, FM, FM-MPX Control & Equalizer Circuit Board   Model SA-5800

▨ Earth Line   ▨ ⊕ Line

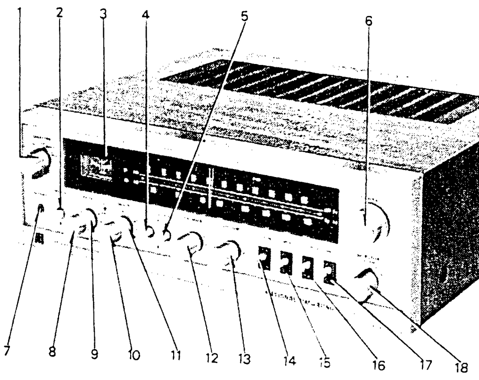


725 Terminal of Power Source p.c.b.
IC 301
TR 301
TR204
PL8 DIAL POINTER LIGHT (5V 60mA)
PL1 TUNING LIGHT
TR102
TR103
TR205
TR206
TR115
TR113
TR114
TR112
TR303
TR302
TR402
TR401
TR403
TR404
(PHONO)
(AUX)
LEFT
RIGHT
STEREO EYE
PL2 (7.5V 75mA)
PL1 (AUX) LIGHT
PL11 (AM) LIGHT
PL10 (FM) LIGHT
PL9 (PHONO) LIGHT
7.5V 75mA
TR4
TR3
TR101
TR104
TR105
TR106
TR107
TR108
TR109
TR501
TR111
TR110
TR7
TR8
TR6
TR5
TR2
TR1
SUPA1170
AM ANTENNA COIL
BALUN COIL (L9)
Ext. FM Antenna Terminal
Ext. AM Antenna Terminal
Yellow
Green
Black
White
(L201)
(REC OUT) (PLAY BACK)
TAPE DECK1
TAPE DECK2
TR503
TR504
TR502
(PRE OUT) (MAIN IN)
626 Terminal of Driver p.c.b.
601 Terminal of Driver p.c.b.
SUPA1110
SUPA1120
VR535 100K (B)
VR536 100K (B)
VR533 100K (B)
VR534 100K (B)
VR509 250K (B)
VR510 250K (B)
VR507 250K (B)
VR508 250K (B)
TREBLE CONTROL
BASS CONTROL
VOLUME CONTROL
BALANCE CONTROL
(S7) LOUDNESS
(S6) HI-FILTER

■ LOCATION OF CONTROLS

■ ANORDNUNG DER EINSTELLKNOPFE

1. SPEAKERS SELECTOR SWITCH
2. POWER SOURCE SWITCH
3. METER
4. HIGH FILTER SWITCH
5. LOUDNESS SWITCH
6. TUNING CONTROL
7. HEAD PHONES
8. BASS CONTROL (LEFT)
9. BASS CONTROL (RIGHT)
10. TREBLE CONTROL (LEFT)
11. TREBLE CONTROL (RIGHT)
12. BALANCE CONTROL
13. VOLUME CONTROL
14. MUTING SWITCH
15. MODE SWITCH
16. TAPE MONITOR (1) SWITCH
17. TAPE MONITOR (2) SWITCH
18. SELECTOR SWITCH


1
2
3
4
5
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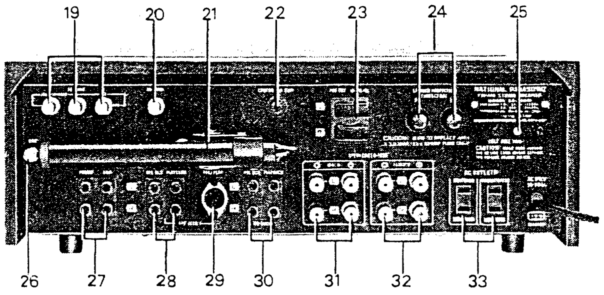
11
12
13
14
15
16
17
18

1. LAUTSPRECHER-WÄHLESCHALTER
2. NETZSCHALTER
3. FELDSTÄRKENANZEIGE
4. HÖHEN FILTERSCHALTER (HIGH)
5. LAUTSTÄRKEKORREKTUR
6. ABSTIMMEN
7. KOPFHÖRERANSCHLUSS
8. BASSREGLER (BASS) - Linker
9. BASSREGLER (BASS) - Rechter
10. HÖHENREGLER (TREBLE) - Linker
11. HÖHENREGLER (TREBLE) - Rechter
12. BALANCEREGLER
13. LAUTSTÄRKEREGLER
14. SCHALTER FÜR STUMMABSTIMMUNG
15. BETRIEBSARTENSCHALTER
16. MITHÖRSCHALTER FÜR TONBAND (TAPE MON-1)
17. MITHÖRSCHALTER FÜR TONBAND (TAPE MON-2)
18. WAHLSCHALTER (SELECTOR)


19
20
21
22
23
24
25
26
27
28
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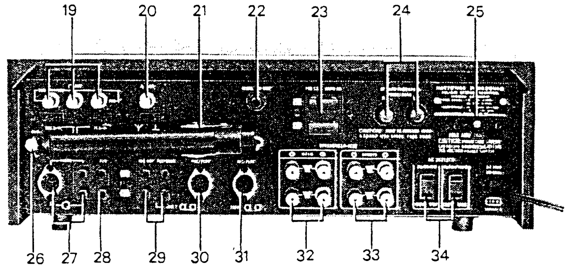
31
32
33

Set for Germany

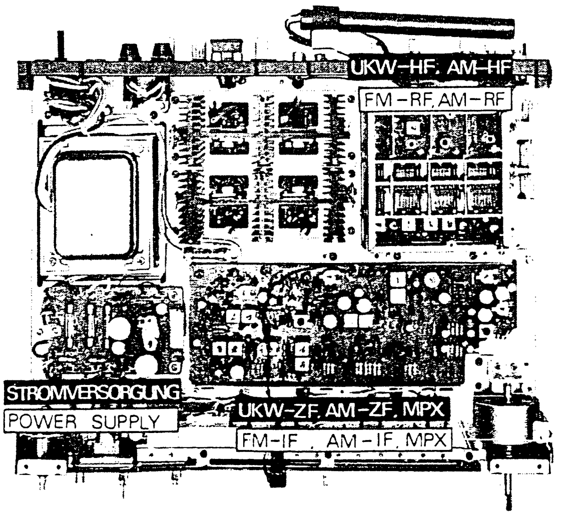

19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34

19. FM ANTENNA TERMINALS
20. AM ANTENNA TERMINAL
21. AM FERRITE CORE ANTENNA
22. CENTER CHANNEL OUTPUT TERMINAL
23. PRE-MAIN AMP CONNECTOR TERMINALS
24. SPEAKER PROTECTION FUSES
25. VOLTAGE SELECTOR SWITCH
26. GROUND TERMINAL
27. INPUT TERMINALS
28. TAPE MONITOR (1) TERMINAL
29. TAPE MONITOR (1) DIN SOCKET
30. TAPE MONITOR (2) TERMINALS
31. MAIN SPEAKER TERMINALS
32. REMOTE SPEAKER TERMINALS
33. AC OUTLETS

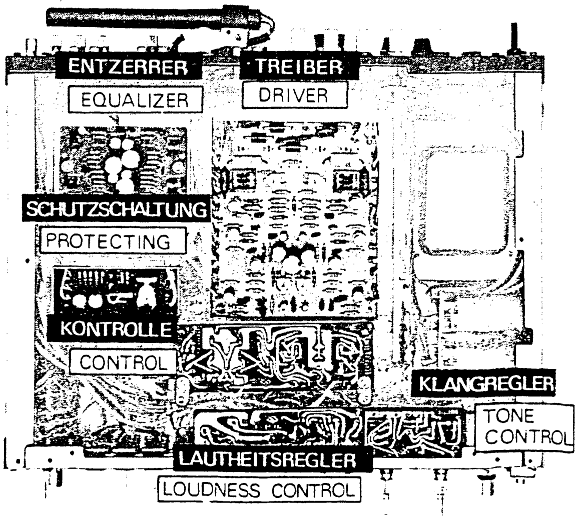
19. UKW ANTENNEN SCHRAUBKLEMME UND DIN BUCHSEN
20. AM ANTENNEN SCHRAUBKLEMME UND DIN BUCHSE
21. AM FERRITSTABANTENNE
22. ZENTRALER KANALAUSGANGS-ANSCHLUSS
23. VORVERSTÄRKER UND VERSTÄRKER ANSCHLUSSKLEMME
24. LAUTSPRECHER SCHUTZ SICHERUNG-SHALTER
25. NETZEINSTELLUNG
26. ERDE
27. EINGANGSKLEMMEN [PHONO]
28. ZUSATZEINGANGSANSCHLÜSSE
29. TAPE MONITOR-1 BUCHSEN (TONBAND)
30. TAPE MONITOR-1 DIN BUCHSE (TONBAND)
31. TAPE MONITOR-2 DIN BUCHSE (TONBAND)
32. HAUPTLAUTSPRECHER ANSCHLUSS (MAIN)
33. FERNLAUTSPRECHER ANSCHLUSS (REMOTE)
34. STROMAUSFLÜSSE

■ LOCATION OF CIRCUIT BOARD

■ ANORDNUNG DER SCHALTPLATTE


UKW-HF, AM-HF
FM-RF, AM-RF
STROMVERSORGUNG
POWER SUPPLY
UKW-ZF, AM-ZF, MPX
FM-IF , AM-IF, MPX

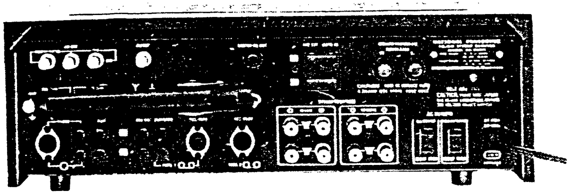
Top View **Draufsicht**

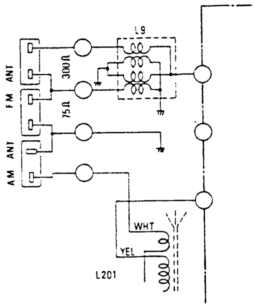

ENTZERRER
EQUALIZER
TREIBER
DRIVER
SCHUTZSCHALTUNG
PROTECTING
KONTROLLE
CONTROL
KLANGREGLER
TONE CONTROL
LAUTHEITSREGLER
LOUDNESS CONTROL

Bottom View **Unteranicht**

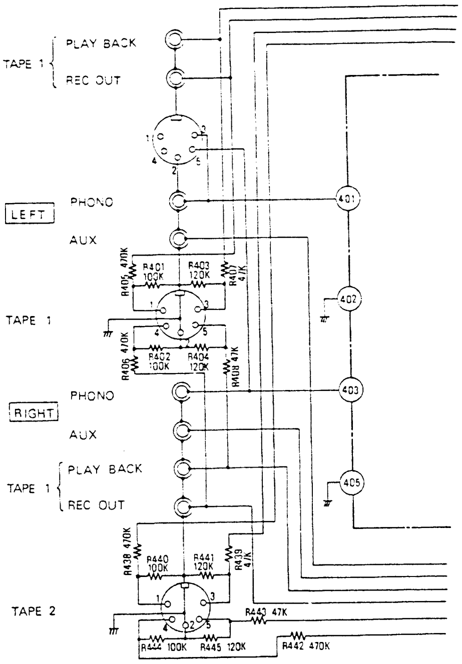
■ FÜR DEUTSCH SCHALTBILD

■ Schematic diagram for Germany




L9
300Ω
75Ω
FM ANT
AM ANT
WHT
YEL
L201

UKW & AM Antennen


TAPE 1
PLAY BACK
REC OUT
LEFT
PHONO
AUX
R401 100K
R403 120K
R405 470K
R407 47K
TAPE 1
R402 100K
R404 120K
R406 470K
R408 47K
401
402
403
405
RIGHT
PHONO
AUX
TAPE 1
PLAY BACK
REC OUT
R438 470K
R440 100K
R441 120K
R439 47K
TAPE 2
R443 47K
R444 100K
R445 120K
R442 470K

Eingangswähler

■ TO REMOVE CABINET AND FRONT PANEL

1. Remove four (4) cabinet-mounting screws, nos. ① ~ ④, as illustrated in fig. 1.
2. Remove cabinet from chassis.
3. Remove six (6) red bottom board-mounting screws from set bottom view.
4. Remove bottom board from chassis.
5. To remove front panel, nine (9) control knobs from front view should be first removed.
6. Remove eight (8) panel-mounting screws, nos. ⑤ ~ ⑫, as illustrated in fig. 1.

Screws

①~④ .... XSB4 +16BVCS
⑤~⑫ XTV3D8CK
Bottom Board (X6) XTV3D8CR

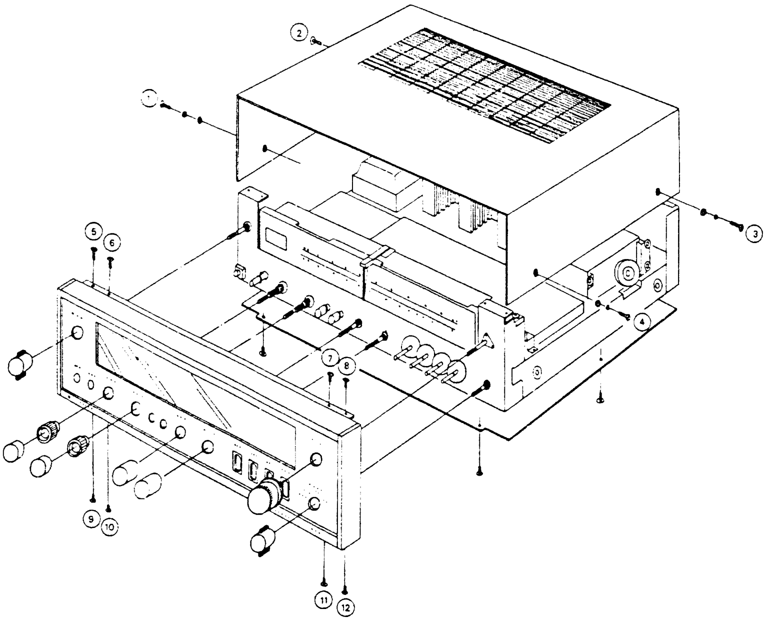

①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
⑪
⑫

Fig. 1 **Abb. 1**

■ AUSBAUEN DES GEHÄUSE UND FRONTPANEEL

1. Die vier (4) Gehäuse-Befestigungsschrauben Nr. ①~④ entfernen. (Vgl. Abb. 1)
2. Gehäuse vom Chassis abnehmen.
3. Die sechs (6) rote Bodenplatte-Befestigungsschrauben entfernen vom Unteransicht abnehmen.
4. Bodenplatte vom Chassis abnehmen.
5. Um das Paneel zu demontieren, das neum (9) Einstellknöpfe zuerst abnehmen.
6. Die acht (8) Frontpaneel-Befestigungsschrauben Nr. ⑤~⑫ entfernen. (Vgl. Abb. 1)

■ TO REMOVE CONTROL P. C. B.

1. Remove front panel from chassis.
2. Remove four (4) switch-mounting screws, nos. ⑤ ～ ⑧, as illustrated in fig. 2.
3. Remove four (4) variable resistor nuts, nos. ① ～ ④, as illustrated in fig. 2.
4. Remove tone control and loudness control printed circuit board.

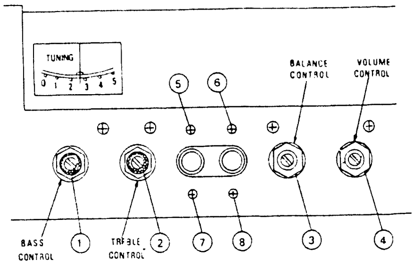

TUNING
0 1 2 3 4 5
⑤
⑥
BALANCE CONTROL
VOLUME CONTROL
BASS CONTROL
①
TREBLE CONTROL
②
⑦
⑧
③
④

Fig. 2 **Abb. 2**

■ ABNEHMEN DER KONTROLLE-SCHALTPLATTE

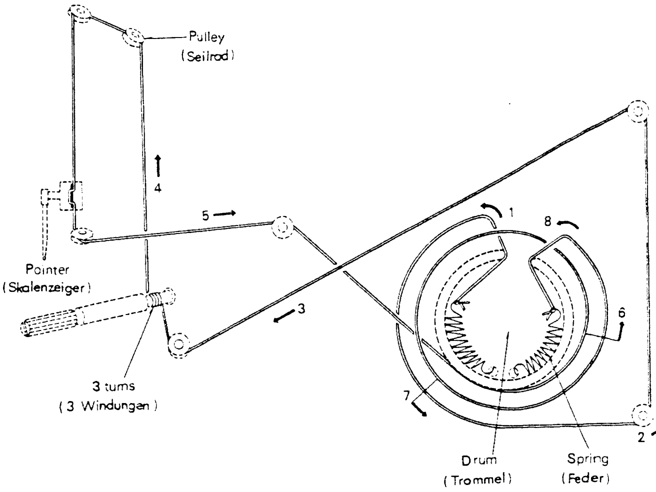
1. Frontpaneel vom Chassis abnehmen.
2. Die vier (4) schalter-Befestigungsschrauben Nr. ⑤～⑧ entfernen. (Vgl. Abb. 2)
3. Die vier (4) Einstellwiderstände-Befestigungschraubenmuttern Nr. ①～④ entfernen. (Vgl. Abb. 2)
4. Kontrolle-schaltplatte vom Chassis abnehmen.

■ DIAL CORD INSTALLATION GUIDE

1. Dial cord length is 63⅛″ (160cm).
2. Tuning gang is positioned at minimum capacity. (Frequency is maximum)

■ ANWEISUNG FÜR DAS AUFLEGEN DES SKALENSEILES

1. Skalenseil-Länge = 160cm.
2. Drehkondensator sollte für minimum Kapazität eingestellt sein.


Pulley
(Seilrod)
4
5
Pointer
(Skalenzeiger)
3
1
8
6
7
2
3 turns
(3 Windungen)
Drum
(Trommel)
Spring
(Feder)

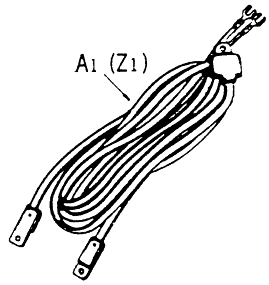
☆ Notes

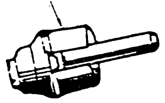
* DC voltage speaker protecting circuit used in this set

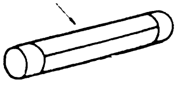
(1) When DC voltage appears at the speaker terminal, the relay operates no matter whether the speaker switch position be ON or OFF, so that the secondary winding of the power transformer is shorted to break the fuse of the primary side, thereby protecting the speaker from damage.

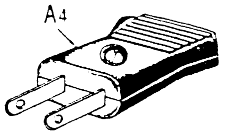
(2) Regarding a high output amplifier such as is used in this set, even when the speaker is not connected while the power switch is ON, a big shock noise caused by too quick operation of knobs or by insertion or disconnection of the input terminal pin jack with the sound volume raised may energize the speaker protecting circuit, which breaks the fuse on the primary side.

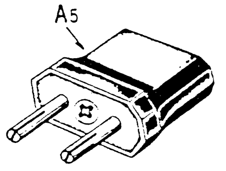
■ ACCESSORIES ■ ZUBEHÖR

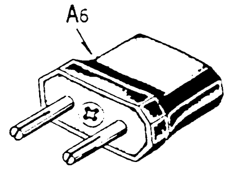












REPLACEMENT PARTS LIST

Notes :

1. Part numbers are indicated on most mechanical parts.
   Please use this part number. for parts orders.
2. Ⓝ indicates the New Parts.
3. A～C rank A rank parts will cover 80% of repair needs.
   A＋B rank parts will cover 95% of repair needs.
   C rank parts are less necessary.

Bemerkungen :

1. Die meisten mechanischen Teile sind mit Teilnummern versehen.
   Bitte geben Sie diese Nummern an, sofern die Teile keine Bezugsnummern haben.
2. Ⓝ bedeutet: Neue Teile.
3. Gruppen A～C: Teile der Gruppe A machen 80% des Ersatzteilbedarfes aus.
   Teile der Gruppen A und B machen 95% des Ersatzteilbedarfes aus.
   Teile der Gruppe C werden seltener benotigt.

IC, TRANSISTORS AND DIODES
INTEGRIERTTE SCHALTUNG, TRANSISTOREN und DIODEN

Ref. No. Bezugs Nr.	Part No. Teil Nr.	Description Bezeichnung	Per Set (Pcs.) Stückzahl pro Gerät	Remarks Bemerkungen
IC301	AN211	FM MPX Circuit	1	A
TR1.2	3SK39Q	FM RF Amplifier [FET]	2	A
TR3.4.5.6.7	2SC920Q	FM/AM Mix. OSC AM RF Amp	5	A
TR101.102.103. 104.105 106. 107.108.109 110.111.112. 204.205	2SC829C	FM IF 1st～6th Muting Amp. AM IF Amp	14	A
TR113.114	2SC828Q.R	Tuning Light Switching Amp	2	A
TR115	2SA561Y.GR	Tuning Light DC Amp.	1	A
TR301	2SA642S.W	Stereo Eye DC Amp.	1	A
TR302.303.206	2SA666Q.R	AF Amp. (Use with pair)	3	A
TR401.402.501. 502.503.504	2SA666A-P.Q	Equalizer. Control Amp. (Use with pair)	6	A
TR603.604.605. 606	2SA666A-1-P.Q～ 7-P.Q	Control Amp	4	A
TR403.404	2SC828A Ⓕ-Q.R	Equalizer Amp	2	A
TR601.602	2SA550A-1-Q.R.S	AF Amp.	2	A
TR611.612	2SA546A-A.B.D.E.H	Driver Amp. } Use with pair	1 pair	A
TR607.608.609. 610	2SC696A-A.B.D.E.H	Driver Amp } Use with pair	2 pair	A
TR613.614.615. 616	2SD188M	Power Amp.	4	A
TR711	2SD205K.L	Ripple Filter	1	Ⓝ A
TR901.902	2SC828A-Q.R.S	Switching. Speaker Protection	2	A
TR903	2SA545L	Switching. Speaker Protection	1	A
D1.2.3.4.5. 108.301	OA90	A.O.C.	7	A
D101.102	2-0A79	Discriminator	1 pair	A
D105.204 205. 212	1S1211	A.O.C.	4	A
D103.104.107. 206.207.208. 209.210.211	0A79	Muting. AM. Meter Detector	9	A
D601.602.603. 604.605.606. 607.608	RVDDS-410	A.O.C.. Thermo Compensation	8	A
D701.702.703. 704	RVDSR3AM-2N	Rectifier	4	A
D711.712.714	RVDSD-1Y	Rectifier	3	A
D713	RVD1N4740	Zener	1	Ⓝ A

COILS, TRANSFORMERS and CERAMIC FILTER
SPULEN, TRANSFORMATOREN und KERAMISCH FILTER

Ref. No. Bezugs Nr.	Part No. Teil Nr.	Description Bezeichnung	Per Set (Pcs.) Stückzahl pro Gerät	Remarks Bemerkungen
L1	SLAA4N6-Z	FM Antenna Coil	1	Ⓝ A
L2.101.102	SLQX151-1Y	RFC	3	B
L3	SLDA4N6-Z	FM DET Coil	1	A
L4	SLDA4N14-Z	FM DET Coil	1	Ⓝ A
L5	RLQY15G5	RFC	1	B
L6	SLOA4N7-T	FM OSC Coil	1	Ⓝ A
L201	SLFA2E10-O	AM Antenna Coil	1	Ⓝ A
L7	SLDA2C3	AM DET Coil	1	A
L8	SLOA2C3	AM OSC Coil	1	A
L9	SLAA4W1	FM Balun Coil	1	A
L601.602	SLEA5001-N	High Character Stabilizer	2	B
L301	SLMA1X1-K	SCA Trap Coil	1	A
T1	SLIA4C101	FM 1st IF Transformer	1	A
T2 3	RLI2C157-M	AM 1st IF Transformer	2	A
T101.102.103	SLIA4C23	FM 5th. 6th IF Transformer	3	A
T104	SLIA4C54	FM 7th IF Transformer (P)	1	A
T105	SLIA4C56	FM 7th IF Transformer (S)	1	A
T106.107	SLIA4C24	FM Muting IF Transformer	2	A
T203.204	RLI2C257-M	AM 2nd IF Transformer	2	A
T205	RLI2C450-M	AM 3rd IF Transformer	1	A
T301	RLM1C16	19kHz Coil	1	A
T302	RLM1C17	38kHz Coil	1	A
T303.304	SLMA1C1-K	19kHz Trap Coil	2	A
T701	SLTA5R14S-W	Power Transformer	1	Ⓝ A
CF101.102.103	RVFCF10M12C-G. B.R.W.Y	FM 1st. 3rd. 4th Ceramic Filter (Use with pair)	3	A

RESISTORS
WIDERSTÄNDE

Ref. No. Bezugs Nr.	Part No. Teil Nr.	Description Bezeichnung	Per Set (Pcs.) Stückzahl pro Gerät	Remarks Bemerkungen
R4.210.213. 216.511.512. 908	ERD14TJ101	100ohm. 1/4W. ±5%. Carbon	7	B
R630.631	ERD14TJ151	150ohm. 1/4W. ±5%. Carbon	2	B
R126.128.417. 418.433.434. 658	ERD14TJ221	220ohm. 1/4W. ±5%. Carbon	7	B
R628.629	ERD14TJ271	270ohm. 1/4W. ±5%. Carbon	2	B
R117.661.662	ERD14TJ331	330ohm. 1/4W. ±5%. Carbon	3	B
R11.529.530	ERD14TJ391	390ohm. 1/4W. ±5%. Carbon	3	B
R109.113	ERD14TJ471	470ohm. 1/4W. ±5%. Carbon	2	B
R317.318.519 520	ERD14TJ681	680ohm. 1/4W. ±5%. Carbon	4	B
R636.637	ERD14TJ821	820ohm. 1/4W. ±5%. Carbon	2	B
R104.118.124. 606.607.614. 615.659.660	ERD14TJ102	1Kohm. 1/4W. ±5%. Carbon	9	B
R132	ERD14TJ561	560ohm. 1/4W. ±5%. Carbon	1	B
R646.647	ERD14TJ122	1.2Kohm. 1/4W. ±5%. Carbon	2	B
R427.428	ERD14TJ182	1.8Kohm. 1/4W. ±5%. Carbon	2	B
R137.324.415. 416.543.544	ERD14TJ222	2.2Kohm. 1/4W. ±5%. Carbon	6	B
R143.214.904	ERD14TJ272	2.7Kohm. 1/4W. ±5%. Carbon	3	B
R211.215.311. 312.517.518. 632.633.713	ERD14TJ332	3.3Kohm. 1/4W. ±5%. Carbon	9	B
R521.522.545. 546.612.613	ERD14TJ392	3.9Kohm. 1/4W. ±5%. Carbon	6	B
R616.617.327	ERD14TJ472	4.7Kohm. 1/4W. ±5%. Carbon	3	B
R551	ERD14TJ562	5.6Kohm. 1/4W. ±5%. Carbon	1	B
R224.308.319. 320.905	ERD14TJ682	6.8Kohm. 1/4W. ±5%. Carbon	5	B
R13.218.314. 315.419.420. 501.502.525. 526.531.532. 901.902.903. 906	ERD14TJ103	10Kohm. 1/4W. ±5%. Carbon	16	B
R425.426.503. 504	ERD14TJ123	12Kohm. 1/4W. ±5%. Carbon	4	B
R136.431.432. 527.528.547. 548	ERD14TJ153	15Kohm. 1/4W. ±5%. Carbon	7	B
R9	ERD14TJ183	18Kohm 1/4W. ±5%. Carbon	1	B
R103.106.114. 120.131.421. 422.541.542. 907	ERD14TJ273	27Kohm. 1/4W. ±5%. Carbon	10	B
R413.414.523. 524	ERD14TJ333	33Kohm. 1/4W. ±5%. Carbon	4	B
R129	ERD14TJ393	39Kohm. 1/4W ±5%. Carbon	1	B
R407.408	ERD14TJ473	47Kohm. 1/4W. ±5%. Carbon	2	B
R515.516	ERD14TJ563	56Kohm. 1/4W. ±5%. Carbon	2	B
R313.316.605	ERD14TJ683	68Kohm. 1/4W. ±5%. Carbon	3	B
R102.108.112. 119.435.436	ERD14TJ823	82Kohm. 1/4W. ±5%. Carbon	6	B
R7.321.322. 401.402.537. 538.549.550. 603.604.626. 627	ERD14TJ104	100Kohm. 1/4W. ±5%. Carbon	13	B
R2.403.404	ERD14TJ124	120Kohm. 1/4W. ±5%. Carbon	3	B
R429.430	ERD14TJ224	220Kohm. 1/4W ±5%. Carbon	2	B

Ref. No. Bezugs Nr.	Part No. Teil Nr.	Description Bezeichnung	Per Set (Pcs.) Stückzahl pro Gerät	Remarks Bemerkungen
R405.406.601.602	ERD14TJ474	470Kohm. 1/4W. ±5%. Carbon	4	B
R19	ERD14VJ100	10ohm. 1/4W. ±5%. Carbon	1	B
R203	ERD14VJ220	22ohm. 1/4W. ±5%. Carbon	1	B
R12.101.212	ERD14VJ470	47ohm. 1/4W. ±5%. Carbon	3	B
R8	ERD14VJ101	100ohm. 1/4W. ±5%. Carbon	1	B
R121.122.133.141	ERD14VJ221	220ohm. 1/4W. ±5%. Carbon	4	B
R207	ERD14VJ271	270ohm. 1/4W. ±5%. Carbon	1	B
R111	ERD14VJ331	330ohm. 1/4W. ±5%. Carbon	1	B
R223	ERD14VJ471	470ohm. 1/4W. ±5%. Carbon	1	B
R110.115.206.232	ERD14VJ561	560ohm. 1/4W. ±5%. Carbon	4	B
R140.301	ERD14VJ681	680ohm. 1/4W. ±5%. Carbon	2	B
R201.204.304	ERD14VJ102	1Kohm. 1/4W. ±5%. Carbon	3	B
R17.18.209	ERD14VJ122	1.2Kohm. 1/4W. ±5%. Carbon	3	B
R105.302	ERD14VJ152	1.5Kohm. 1/4W. ±5%. Carbon	2	B
R127.227.323	ERD14VJ222	2.2Kohm. 1/4W. ±5%. Carbon	3	B
R230.231.303	ERD14VJ272	2.7Kohm. 1/4W. ±5%. Carbon	3	B
R134.135.139.208	ERD14VJ332	3.3Kohm. 1/4W. ±5%. Carbon	4	B
R107.148.149.307	ERD14VJ392	3.9Kohm. 1/4W. ±5%. Carbon	4	B
R142.228.552	ERD14VJ472	4.7Kohm. 1/4W. ±5%. Carbon	3	B
R202	ERD14VJ562	5.6Kohm. 1/4W. ±5%. Carbon	1	B
R220	ERD14VJ822	8.2Kohm. 1/4W. ±5%. Carbon	1	B
R14.147.205	ERD14VJ103	10Kohm. 1/4W. ±5%. Carbon	3	B
R15.138.217	ERD14VJ153	15Kohm. 1/4W. ±5%. Carbon	3	B
R125	ERD14VJ273	27Kohm. 1/4W. ±5%. Carbon	1	B
R225	ERD14VJ333	33Kohm. 1/4W. ±5%. Carbon	1	B
R16.130	ERD14VJ393	39Kohm. 1/4W. ±5%. Carbon	2	B
R305	ERD14VJ473	47Kohm. 1/4W. ±5%. Carbon	1	B
R123	ERD14VJ823	82Kohm. 1/4W. ±5%. Carbon	1	B
R3.10.219.226.229	ERD14VJ104	100Kohm. 1/4W. ±5%. Carbon	5	B
R1.5.6	ERD14VJ124	120Kohm. 1/4W. ±5%. Carbon	3	B
R144	ERD14VJ123	12Kohm. 1/4W. ±5%. Carbon	1	B
R310	ERD14VJ183	18Kohm. 1/4W. ±5%. Carbon	1	B
R146	ERD14VJ224	220Kohm. 1/4W. ±5%. Carbon	1	B
R618.619	ERD14FJ4R7	4.7ohm. 1/4W. ±5%. Carbon	2	B
R638.639.640.641	ERD14FJ100	10ohm. 1/4W. ±5%. Carbon	4	B
R622.623.642.650.651.654.655	ERD14FJ101	100ohm. 1/4W. ±5%. Carbon	7	B
R608.609	ERD14FJ181	180ohm. 1/4W. ±5%. Carbon	2	B
R437	ERD14FJ331	330ohm. 1/4W. ±5%. Carbon	1	B
R409.410.411.412	ERD14TSJ104	100Kohm. 1/4W. ±5%. Carbon	4	Ⓝ B
R539.540	ERD14TSJ184	180Kohm. 1/4W. ±5%. Carbon	2	Ⓝ B
R513.514	ERD14TSJ224	220Kohm. 1/4W. ±5%. Carbon	2	Ⓝ B
R423.424.505.506	ERD14TSJ334	330Kohm. 1/4W. ±5%. Carbon	4	Ⓝ B
R150	ERD12TJ150	15ohm. 1/2W. ±5%. Carbon	1	B
R712	ERD12TJ120	12ohm. 1/2W. ±5%. Carbon	1	B
R151	ERD12TJ681	680ohm. 1/2W. ±5%. Carbon	1	B
R711	ERD12TJ680	68ohm. 1/2W. ±5%. Carbon	1	B
R326	ERD12TJ820	82ohm. 1/2W. ±5%. Carbon	1	B
R620.621	ERD12TJ821	820ohm. 1/2W. ±5%. Carbon	2	B
R624.625.644.645	ERD12TJ272	2.7Kohm. 1/2W. ±5%. Carbon	4	B
R648.649	ERU2P100	10ohm. 2W. ±10%. Fuse Resistor	2	B
R652.653.656.657	ERU2PR47	0.47ohm. 2W. ±10%. Fuse Resistor	4	Ⓝ B
R714	ERM4P271	270ohm. 4W. ± 5%. Wire	1	C
R670.671	ERM4P331	330ohm. 4W. ± 5%. Wire	2	C

RESISTORS (Set for Germany)

Ref. No. Bezugs Nr.	Part No. Teil Nr.	Description Bezeichnung	Per Set (Pcs.) Stückzahl pro Gerät	Remarks Bemerkungen
R439.443	ERD14TJ473	47Kohm. 1/4W. ±5%. Carbon	2	B
R440.444	ERD14TJ104	100Kohm. 1/4W. ±5%. Carbon	2	B
R441.445	ERD14TJ124	120Kohm. 1/4W. ±5%. Carbon	2	B
R438.442	ERD14TJ474	470Kohm. 1/4W. ±5%. Carbon	2	B

VARIABLE RESISTORS
EINSTELLWIDERSTÄNDE

Ref. No. Bezugs Nr.	Part No. Teil Nr.	Description Bezeichnung	Per Set (Pcs.) Stückzahl pro Gerät	Remarks Bemerkungen
VR634.635	EVLS3AA00B13	ICO Adjustment 1Kohm (B)	2	A
VR610.611	EVLS3AA00B23	DC Unbalance Adjustment 2Kohm (B)	2	A
VR306	EVLS3AA00B53	Separation Adjustment 5Kohm (B)	1	A
VR145.309	EVLS3AA00B54	Muting Level, Leak Carrier Adjustment 50Kohm (B)	2	A
VR221	EVLS3AA00B55	AM Meter "zero" Adjustment 500Kohm (B)	1	A
VR509.519	EVGN9AL30BF5	Volume Control 250Kohm (B)	1	A
VR507.508	EVFNTAL30252	Balance Control 250Kohm (BH)	1	A
VR533.534.535.536	EVF38AN01B15	Bass. Treble Control 100Kohm (B)	2	A

CAPACITORS
KONDENSATOREN

Ref. No. Bezugs Nr.	Part No. Teil Nr.	Description Bezeichnung	Per Set (Pcs.) Stückzahl pro Gerät	Remarks Bemerkungen
C6.7.15.16	ECKD05102P	0.001mfd. 50WV. $^{+100}_{-0}$%. Ceramic	4	C
C4.8.11.17.18.24.101.203	ECKE05103P	0.01mfd. 50WV. $^{+100}_{-0}$%. Ceramic	8	C
C5.26.33.34.105.106.109.111.113.121.125.127.129.132.133.134.202.210.212.213.219.224.225.235.236.237.239.240.242	ECKE05223P	0.022mfd. 50WV. $^{+100}_{-0}$%. Ceramic	29	C
C104	ECKE05103MY	0.01mfd. 50WV. ±20%. Ceramic	1	C
C717	ECKD05473Z	0.047mfd. 50WV. $^{+80}_{-20}$%. Ceramic	1	Ⓝ C
C617.618	ECKD5331KF	330mmf. 500WV. ±10%. Ceramic	2	C
C405.406	ECKD5821K	820mmf. 500WV. ±10%. Ceramic	2	C
C701.702.703.704.713	ECKD5103P	0.01mfd. 500WV. $^{+100}_{-0}$%. Ceramic	5	C
C35.136	ECCD05010CC	1mmf. 50WV. ±0.25mmf. Ceramic	2	C
C122.123	ECCD051R5CC	1.5mmf. 50WV. ±0.25mmf. Ceramic	2	C
C22	ECCD05030CC	3mmf. 50WV. ±0.25mmf. Ceramic	1	C
C120.211.222	ECCD05040CC	4mmf. 50WV. ±0.25mmf. Ceramic	3	C
C25.110.207	ECCD05070DC	7mmf. 50WV. ±0.5mmf. Ceramic	3	C
C3.14.21	ECCD05100KC	10mmf. 50WV. ±10%. Ceramic	3	C
C216	ECCD05120KC	12mmf. 50WV. ±10%. Ceramic	1	C
C30.32	ECCD05150KC	15mmf. 50WV. ±10%. Ceramic	2	C
C409.410.521.522	ECCD05330KC	33mmf. 50WV. ±10%. Ceramic	4	C
C31	ECCD05390KC	39mmf. 50WV. ±10%. Ceramic	1	C
C29	ECCD05100KU	10mmf. 50WV. ±10%. Ceramic	1	C
C114	ECCD05470KU	47mmf. 50WV. ±10%. Ceramic	1	C
C124.238	ECCD05101K	100mmf. 50WV. ±10%. Ceramic	2	C
C228	ECCD05121K	120mmf. 50WV. ±10%. Ceramic	1	C
C23	ECCD05181K	180mmf. 50WV. ±10%. Ceramic	1	C
C115.234.505.506	ECCD05221K	220mmf. 50WV. ±10%. Ceramic	4	C
C126	ECCD05331K	330mmf. 50WV. ±10%. Ceramic	1	C
C609.610	ECCD5270K	27mmf. 500WV. ±10%. Ceramic	2	Ⓝ C
C611.612	ECCD5680K	68mmf. 500WV. ±10%. Ceramic	2	Ⓝ C
C603.604	ECCD5121K	120mmf. 500WV. ±10%. Ceramic	2	Ⓝ C
C318.319	ECQG05102JZN	0.001mfd. 50WV. ± 5%. Polyester	2	C
C415.416	ECQG05472JZN	0.0047mfd. 50WV. ± 5%. Polyester	2	C
C517.518	ECQG05222KZN	0.0022mfd. 50WV. ±10%. Polyester	2	C
C501.502	ECQG05332KZN	0.0033mfd. 50WV. ±10%. Polyester	2	C
C413.414	ECQG05153JZN	0.015mfd. 50WV. ± 5%. Polyester	2	C
C208.209.230.231.201	ECQG05103KZN	0.01mfd. 50WV. ±10%. Polyester	5	C
C204.220.226.310.311.513.514.515.516	ECQG05223KZN	0.022mfd. 50WV. ±10%. Polyester	9	C
C102.103.107.108.112.119.503.504.529.530	ECQG05333KZN	0.033mfd. 50WV. ±10%. Polyester	10	C
C619.620	ECQM1473M	0.047mfd. 125WV. ±20%. Polyester	2	C
C217	ECQS1351JZ	350mmf. 125WV. ± 5%. Styrol	1	C
C305	ECQS1471JZ	470mmf. 125WV. ± 5%. Styrol	1	C
C302	ECQS1152KZ	1500mmf. 125WV. ±10%. Styrol	1	C
C301	ECQS1562KZ	5600mmf. 125WV. ±10%. Styrol	1	Ⓝ C
C315.317	ECQS1222JZ	2200mmf. 125WV. ± 5%. Styrol	2	Ⓝ C
C128	ECAG25ER1	0.1mfd. 25WV. Electrolytic	1	B
C314.316.507.508	ECAG25ER33	0.33mfd. 25WV. Electrolytic	4	B
C312.313.417.418.135	ECAG25ER47	0.47mfd. 25WV. Electrolytic	5	B
C525.526	ECSZ25EF1	1mfd. 25WV. Electrolytic	2	B
C401.402	ECSZ25EF3R3	3.3mfd. 25WV. Electrolytic	2	B
C309	ECEA6V220	220mfd. 6.3WV. Electrolytic	1	B
C137.411.412	ECEA6V47	47mfd. 6.3WV. Electrolytic	3	B
C407.408.509.510.523.524	ECEA6V100	100mfd. 6.3WV. Electrolytic	6	B
C403.404	ECEA6V470	470mfd. 6.3WV. Electrolytic	2	B

Ref. No. Bezugs Nr.	Part No. Teil Nr.	Description Bezeichnung	Per Set (Pcs.) Stückzahl pro Gerät	Remarks Bemerkungen
C613, 614	ECEA16V10	10mfd. 16WV. Electrolytic	2	B
C307	ECEA10V33	33mfd. 10WV. Electrolytic	1	B
C304	ECEA10V47	47mfd. 10WV. Electrolytic	1	B
C719, 901, 902	ECEA10V220	220mfd. 10WV. Electrolytic	3	B
C227, 519, 520	ECEA16V10	10mfd. 16WV. Electrolytic	3	B
C131, 718	ECEA16V47	47mfd. 16WV. Electrolytic	2	B
C118, 229, 223, 308, 320	ECEA16V100	100mfd. 16WV. Electrolytic	5	B
C221	ECEA16V220	220mfd. 16WV. Electrolytic	1	B
C306	ECEA25V3R3	3.3mfd. 25WV. Electrolytic	1	B
C116	ECEA25V4R7	4.7mfd. 25WV. Electrolytic	1	B
C528, 711	ECEA25V100	100mfd. 25WV. Electrolytic	2	B
C527	ECEA25V220	220mfd. 25WV. Electrolytic	1	B
C117, 130, 218, 232, 233, 241, 243	ECEA50V1	1mfd. 50WV. Electrolytic	7	B
C607, 608	ECEA50V47	47mfd. 50WV. Electrolytic	2	B
C419, 605	ECEA50V100	100mfd. 50WV. Electrolytic	2	B
C715, 716	ECEA50V220	220mfd. 50WV. Electrolytic	2	B
C705, 706	ECEM35R222Z	2200mfd. 35WV. Electrolytic	2	B
C511, 512	ECAG25ER68	0.68mfd. 25WV. Electrolytic	2	B
C601, 602	ECAG25E1	1mfd. 25WV. Electrolytic	2	B
C723	ECNU4A102M	0.001mfd. 450WV. ±20%. Paper	1	C
C721, 722	ECNU4A103M	0.01mfd. 450WV. ±20%. Paper	2	C
C712	ECHS1104M	0.1mfd. 125WV. ±20%. Paper	1	C

VARIABLE CAPACITORS
EINSTELL KONDENSATOREN

CV2, 10, 13, 20, 28, 206, 215	ECV7PN34P12G	Tuning Gang FM/AM	1	A
CT2, 3	ECV1ZW10P50	Trimmer	2	A
CT1, 5, 4	ECV1ZW10P12	Trimmer	3	A
CT6, 7	ECV1ZW20P12	Trimmer	2	A

THERMISTORS and COMPONENT COMBINATION
THERMISTOREN und KOMPONENTE KOMBINATION

TH301	RRT103	Thermistor, 10Kohm	1	A
TH601, 602	RRTA202-2	Thermistor, 2Kohm	2	A
M101	EXA5DL04C	Couplate, FM Discriminator	1	A

SWITCHES and RELAY
SCHALTER und RELAIS

S1-1~S1-8	ESRC4A5L30AS	Selector Switch	1	Ⓝ B
S2-1, S2-2	ESRC224L30BS	Speakers Selector Switch	1	B
S3, S4	SSLA8S	Tape Monitor 1, 2 Switch	2	A
S5, S8	SSLA3S	Mode, Muting Switch	2	A
S6, S7	SSHA13S	High Filter, Loudness Switch	2	Ⓝ A
S9	SSHA9S	Power Source Switch	1	A
S10-1~S10-4	SSRA7-1S	Voltage Selector Switch	1	B
	SSEA14	Relay, Speaker Protection	1	A

LIGHTS and FUSES
LEICHT und SICHERUNG

PL1, 8	XAMR18K260	Light, Tuning Eye, Pointer	2	A
PL2, 9~12	XAM37T150	Light, Stereo Eye, PHONO, FM, AM, AUX Indicator (7.5V 75mA)	5	A
PL3~7, 13	XAM35K	Light, Dial & Meter (6.3V 0.25A)	6	A
F601, 602	XBAS1A3001	Fuse, SP. Protection (3A)	2	Ⓝ A
F711, 712	XBAS1B3003	Fuse, Power Source (3A)	2	A
F713	XBA1M10NU100	Fuse, Power Source (1A)	1	Ⓝ A
F714	XBA1F10NU100	Fuse, Power Source (1A)	1	A

CABINETS
GEHÄUSE

CA1 (GE1)	SBNA49	Knob, Selector, Speakers	2	A
CA2 (GE2)	SBNA56	Knob, Power, Hi-Filter, Loudness	3	A
CA3 (GE3)	SBNA50	Knob, Bass Treble [Outside]	2	A
CA4 (GE4)	SKAA380	Cabinet, (Complete)	1	B
CA5 (GE5)	SBNA47	Knob, Tuning Control	1	A
CA6 (GE6)	SGBA34	Badge	1	C
CA7 (GE7)	SBNA48	Knob, Bass Treble [Inside]	2	A
CA8 (GE8)	SBNA46	Knob, Balance Volume	2	A
CA9 (GE9)	SGWA460	Smoke Plate	1	B
CA10 (GE10)	SBNA51S	Knob, Tape Monitor, Muting, Mode	4	A
CA11 (GE11)	SYEA26	Panel (Complete)	1	Ⓝ C

Ref. No. Bezugs Nr.	Part No. Teil Nr.	Description Bezeichnung	Per Set (Pcs.) Stückzahl pro Gerät	Remarks Bemerkungen
CA12 (GE12)	SMAA10-1S	Antenna Terminal, FM/AM	4	C
	SMXA31	Spacer, Antenna Terminal [Gray]	4	C
	SHRA105	Bushing, AM Antenna Coil Lead	1	C
CA13 (GE13)	RJF3109	Terminal, Center Channel Output	1	C
CA14 (GE14)	SJFA3405	Terminal, Pre-Main Amp. Connector	1	C
CA15 (GE15)	SJPA9201	Short Pin	2	B
CA16 (GE16)	SJFA107	Holder, Fuse	2	Ⓝ C
CA17 (GE17)	SGTA970	Name Plate	1	Ⓝ C
CA18 (GE18)	SNEA404	Nut, Ground Terminal	1	C
CA19 (GE19)	SHRA202	Leg	4	C
CA20 ★	SJFA3406	Terminal, Input, Tape Monitor	3	C
☆ (GE20)	SJFA3406	Terminal, Input Tape Monitor	2	C
CA21 (GE21)	SKUA200S	Bottom Board	1	C
CA22 ★	RJS31-1	DIN Socket	1	B
☆ (GE22)	RJS31-1	DIN Socket	3	B
CA23 (GE23)	SMXA31-1	Spacer, Speaker Terminals [Red]	4	C
CA24 (GE24)	SJTA802	Nut, Speaker Terminals	8	C
	SJTA801S	Volt, Speaker Terminals	8	C
CA25 (GE25)	SMXA31	Spacer, Speaker Terminals [Gray]	4	C
CA26 ★	SGPA42A	Rear Panel	1	Ⓝ C
☆ (GE26)	SGPA41A	Rear Panel	1	Ⓝ C
CA27 (GE27)	SJSA9204	Socket, AC Outlet	2	C
CA28 (GE28)	RHR111	Bushing, AC Cord	1	C
CA29 ★	RJA30	AC Cord	1	C
☆ (GE29)	SJAA3	AC Cord	1	C
	XSB4+16BVCS	Screw, Cabinet M'tg.	4	B
	XTV3D8CR	Red Screw, Bottom Board M'tg.	6	C
(GE30)	SJSA6202	AM Antenna Socket	1	C
(GE31)	SJSA6201	FM Antenna Socket	2	C

CHASSIS
CHASSIS

CH1	SSMA13	Meter	1	Ⓝ A
CH2	SDPA5013	Pointer, Dial	1	Ⓝ B
CH3	SKDA211-1	Dial Scale	1	Ⓝ B
CH4	RJV201	Socket, Dial Light	6	C
CH5	RDR20	Pulley, Dial Cord	7	C
CH6	RDZ05-5	Cord, Dial [63-1/8"]	160cm	B
CH7	SJJA8	Headphones	1	B
CH8	SDTA8331	Shaft, Tuning	1	A
CH9	SDXA216	Mounting, Tuning Shaft	1	C
CH10	SDXA912	Mounting, Tuning Shaft	1	C
CH11	SDDA35S	Drum, Dial	1	B
	RDS4090A	Spring, Dial Cord	2	A
	XXAR3H6S	Screw, Drum M'tg.	2	C
	XTV3D8CK	Screw, Panel M'tg.	8	C
	SJF105-1	Holder, Fuse (F714)	1	C
	SJVA1201S	Socket, Power Transistor	4	C

ACCESSORIES
ZUBEHÖR

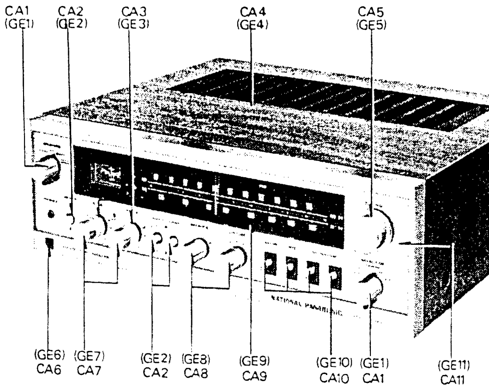
A1 (Z1)	SSAA1	Cord, FM Antenna	1	A
A2 (Z2)	RJP5	Pin Plug	4	A
A3 (Z3)	XBAS1A3001	Fuse, SP Protection (3A)	4	Ⓝ A
A4	SJP15S	AC Plug	1	B
A5	RJP74	AC Plug	1	B
A6	RJP75	AC Plug	1	B

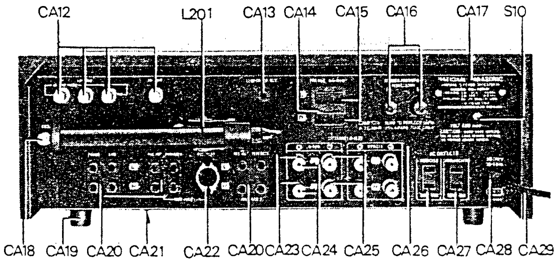
PACKINGS
VERPACKUNG

P1 (V1)	SPPA16-1	Soft Cover	1	C
	SPH77	Cover, AC Cord	1	C
P2 (V2)	SPHA6003	Polyethylene Sheet	1	C
P3 (V3)	SPNA148	Inside Carton (Upper)	1	C
P4 (V4)	SPNA170	Inside Carton (Lower)	1	Ⓝ C
P5 (V5)	SPNA6011A	Carton Box (Inner)	1	Ⓝ C
P6 (V6)	SPNA139	Top Board, Carton Box	1	C
P7 (V7)	SPGA6010A	Carton Box (Outer)	1	Ⓝ C
P8 ★	SQFA91	Printed Matter	1	Ⓝ B
☆ (V8)	SQFA93	Printed Matter	1	Ⓝ B

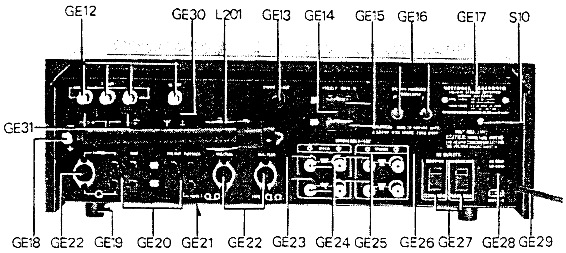
■ CABINET PARTS LOCATION

■ ANORDNUNG DER TEILE AM GEHÄUSE


CA1 (GE1)
CA2 (GE2)
CA3 (GE3)
CA4 (GE4)
CA5 (GE5)
(GE6) CA6
(GE7) CA7
(GE2) CA2
(GE8) CA8
(GE9) CA9
(GE10) CA10
(GE1) CA1
(GE11) CA11


CA12
L201
CA13
CA14
CA15
CA16
CA17
S10
CA18
CA19
CA20
CA21
CA22
CA20
CA23
CA24
CA25
CA26
CA27
CA28
CA29

Set for Germany


GE12
GE30
L201
GE13
GE14
GE15
GE16
GE17
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GE31
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GE22
GE19
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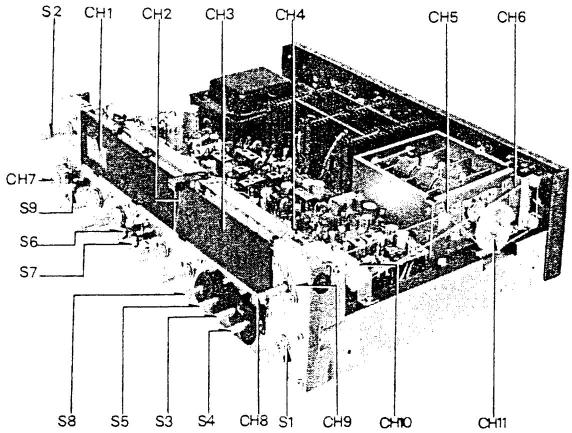
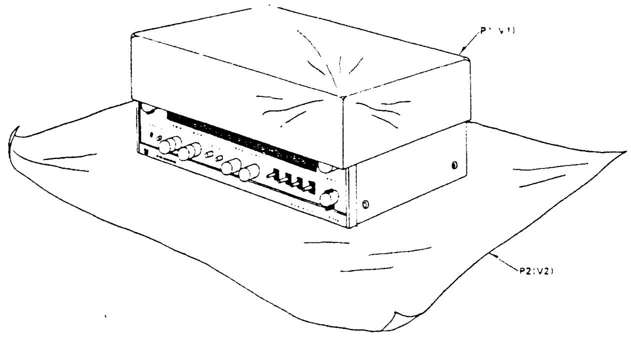
GE23
GE24
GE25
GE26
GE27
GE28
GE29


S2
CH1
CH2
CH3
CH4
CH5
CH6
CH7
S9
S6
S7
S8
S5
S3
S4
CH8
S1
CH9
CH10
CH11

■ PACKING PARTS LOCATION

■ PACKANORDNUNG

①



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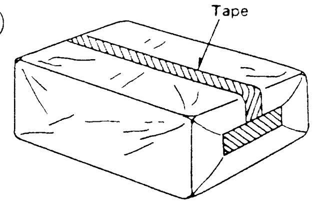

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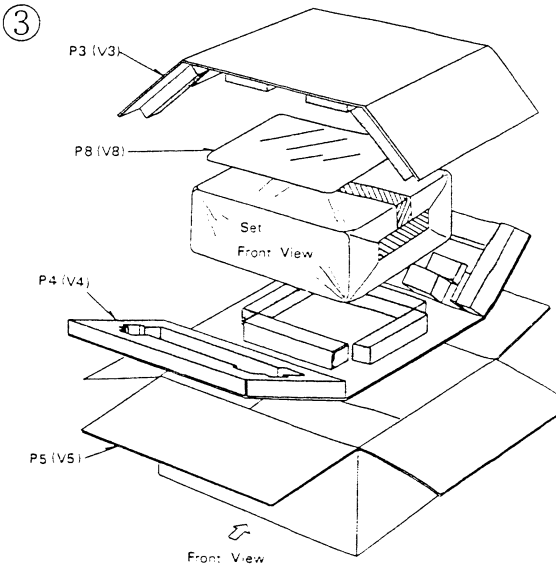
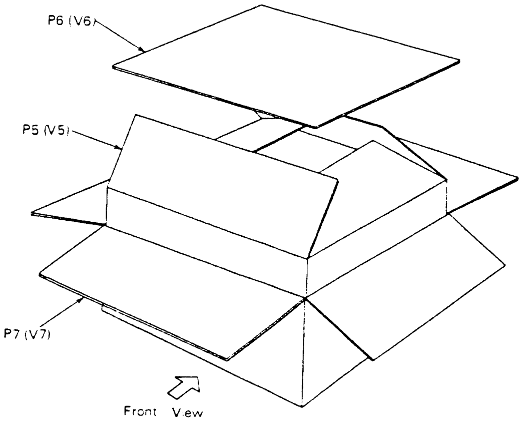

P3 (V3)
P8 (V8)
Set
Front View
P4 (V4)
P5 (V5)
Front View

④


P6 (V6)
P5 (V5)
P7 (V7)
Front View

Printed in Japan
K-7109-5000